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ABSTRACT

Higher rates of mental health problems, including depression, have consistently been documented among lower-income samples, and the highest rates of depression have been found among low-income mothers with young children. This study examined maternal depressive symptoms as a risk factor for the development of children who are already at risk by virtue of their poverty status; the study also examined factors that may intensify or minimize the influence of maternal depressed mood over time. The sample consisted of 177 mothers from the control group of the JOBS Child Outcomes study. Initial and follow-up versions of the CES-D and HOME scale were completed to measure, respectively, mothers' self-reported depressive symptoms and the quality of the home environment. The Behavior Problem Index (BPI) and the Bracken Concept Scale were also completed to measure mothers' reports of their children's behavior and children's school readiness, respectively. Results showed that: (1) children whose mothers report higher levels of depressive symptoms are at risk for more behavior problems and lower school readiness; (2) mothers who received job training or worked during this time period experienced a significant decline in depressive symptoms; and (3) an increase in the mother's depressive symptoms can lead to poorer outcomes for the child, although experiencing a decrease does not necessarily wipe out the effects of the earlier depression. (Contains 17 references.) (EV)

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Maternal depressive symptoms as a risk factor for the development of children in poverty

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The papers presented in this symposium testify to the substantial heterogeneity observed among children living in families who receive welfare. Although these children have in common their families' lower economic resources, they vary on a number of other characteristics known to have an important influence on children's well-being, including safety and adequacy of housing, neighborhood quality, health and temperament, parenting practices, and parental psychological well-being. The analyses I'll present focus on this last factor: specifically, I examine maternal depressive symptoms as a risk factor for the development of children who are already at risk by virtue of their poverty status. I also examine factors that may intensify or minimize the influence of maternal depressed mood over time.

Higher rates of mental health problems, including depression, have consistently been documented among lower-income samples, and among the highest rates of depression have been found among low-income mothers with young children. Results of several recent studies with this population have reported that from 45 to 60 percent of low-income mothers report clinically significant levels of depressive symptoms on the CES-D, a self-report measure of depressive symptoms (e.g., Hall, Gurley, Sachs & Kryscio, 1991; McLoyd et al., 1994; Quint et al., 1994; Walker et al., 1995). These rates are more than double that found in surveys of the general population using the CES-D (Devins & Orme, 1985).

Previous analyses with the control group of the JOBS sample, which I won't present in detail here, have described a similar picture, in which about 40 percent of the mothers report clinically high levels of depressive symptoms. Furthermore, mothers who had themselves been raised in households that received AFDC, and who report higher levels of life stress, were at greatest risk to experience depression.

These high levels of mental health problems among mothers living in poverty are cause for concern in their own right, and the little data available on mental health service utilization tells us that much of this depression goes untreated, either with medication or therapy. However, additional cause for concern comes from the extensive literature documenting cognitive, social, and emotional problems, and high levels of psychopathology, among children of depressed parents (e.g., Hammen et al., 1987; Leadbeater et al., 1996; Radke-Yarrow et al., 1992; Zahn-Waxler et al., 1984). Probably the most often-addressed pathway by which mother's depressed mood affects children's behavior is parenting, and so we know that depressed mothers are less warm and responsive toward their children than nondepressed mothers, and tend to adopt disciplinary strategies that are more hostile or coercive (e.g., Goodman et al., 1993; Harnish et al., 1995).

Less is known about the effects on children of changes in maternal depression over time. And much of what is known is based on small samples of mothers who meet diagnostic criteria for major depression, rather than mothers who report high levels of symptoms but who either do not meet diagnostic criteria, or who may not have had sufficient contact with the mental health system to get diagnosed. To summarize briefly, existing studies on this subject tell us that when mother's depression improves, so does her child's behavior and cognitive development (whether based on mother's self-report or move objective measures). However, over at least a one-year period, children's behavior and cognitive development does not yet return to the levels seen in children whose mothers have never been depressed, so some of the effects of mothers' depression seem to linger after the depression has lifted.

Data from the JOBS Child Outcomes Study provide the opportunity to look at changes in maternal depressive symptoms over time among a sample of poor families, and to link these

changes with both children's behavior problems and their cognitive development. Further, we can look at what other changes may have accompanied the change in depression, and whether these factors explain or mediate part of the association between mother's depression and children's outcomes.

The sample for these analyses consists of 177 mothers from the control group of the JOBS Child Outcomes study. These mothers participated in both the Time 1 or Descriptive Survey (collected in 1992 and 1993) and the Time 2 or Follow-up Survey (collected in 1994 and 1995) Because the large majority of the JOBS sample in Atlanta are African American and unmarried, I included only these mothers in this sample.

Figure 1 describes the key measures used in these analyses. Mothers' self-reported depressive symptoms were assessed with the CES-D. At Time 1 we used the 20-item version while at Time 2 we used the 12-item version; in order to make these 2 measures comparable, we used means rather than summary scores. The 2 versions of the CES-D are highly correlated and have similar reliability at the same time period. Mothers' reports of their children's behavior were assessed with the Behavior Problems Index or BPI, and the children's cognitive development -- specifically, school readiness -- was assessed with the Bracken Basic Concept Scale, which was administered to the child in the home by a trained interviewer. Our measure of parenting practices and the quality of the home environment at Time 1 is the short form of Caldwell & Bradley's HOME scale, while at Time 2 we modified the HOME scale somewhat to include more items that would be appropriate for low-income families. At both time points, the items can be divided into those that measure the emotional quality of parenting (such as warmth and pride), and the cognitive stimulation provided to the child (such as reading to him or taking him on outings). All

other measures are derived from single survey items.

I'll present four sets of analyses. First) we look at whether mother's depressive symptoms at Time 1 and Time 2 predict children's behavior problems and school readiness. Second) we look at changes in depressive symptoms over time, and what characteristics of the mothers account for these changes. Third) we look at whether changes in mothers' depression are associated with children's behavior and school readiness. And fourth) we look at a variety of possible mediators of this association, that may help to explain the process by which changes in mothers' psychological well-being are felt by the child.

First, even among an already at-risk sample, can we document that children whose mothers report higher levels of depressive symptoms are at risk for more behavior problems and lower readiness for school? We regressed Time 2 Bracken and BPI scores, separately, on mothers' depressive symptoms, after controlling for the predictors of depressive symptoms that I mentioned earlier, as well as child age and gender. Table 1 shows that as we expected, CES-D scores predicted more behavior problems and lower school readiness, even when we controlled for predictors of depression. This was true whether we measured mothers' depression at Time 1 or Time 2. And as you can see, depressive symptoms were much more strongly related to behavior problems than to school readiness, as other literature on maternal depression has also found.

Second, what predicts increases or decreases in mothers' depressives symptoms over the 2-year period of this study? I looked at 2 sets of potential predictors (Table 2). First, following Leadbeater and Linares (1992), I considered Time 1 social support and levels of life stress. I use 2 measures of social support: one is mothers' ratings of available support from friends and family;

a dichotomous variable indicates whether the mother thinks such support is available most of the time. The second social support variable indicates whether the mother's own mother (that is, the child's grandmother), lives with the mother or sees her several times each week. Third, high levels of life stress reported at Time 1 were considered; the variable indicates mothers who had experienced 6 or more of the 13 stressful life events assessed. (Note these measures were collected at the Time 1 Descriptive Study and do not reflect changes in social support or stress over time.)

The next set of predictors looks at factors relevant to moving from welfare to self-sufficiency. Keep in mind that these mothers are in the control group of the JOBS evaluation and therefore are not mandated to participate in any job training or education. As the table shows, the percentage of the sample who participated in those kinds of activities over the two-year period is low. Furthermore, few members of the sample had a baby over the course of the study, an experience that could make it more difficult to leave welfare. However, approximately half of the sample had engaged in some paid work during the study, and approximately one-third reported that they had stopped receiving AFDC because of work for some time during the study. These figures are generally consistent with the work of Bane & Ellwood (1994) and others, who have documented the dynamic nature of welfare receipt. It is important to note that these activities are not mutually exclusive; for example, the mothers who stopped AFDC because of paid work are a subset of the mothers who had any paid work; so these two predictors should not be considered independent of each other.

So we used regression analyses to look at whether social support, stress levels, and these employment and life experiences would predict changes in depressive symptoms over time. The

standardized regression coefficients highlighted in gray show whether these variables predict Time 2 depressive symptoms once Time 1 symptom levels are controlled; in other words, do they predict changes in depressive symptoms from Time 1 to Time 2. Contrary to what we expected, initial levels of social support and life stress did not predict changes in maternal psychological well-being over time (see the first 3 columns). However, several of the experiences relevant to the welfare-to-work transition did predict changes in depressive symptoms (next groups of columns). Mothers who received any job training, those who had any paid work, and those who discontinued AFDC payments for some period because of work, experienced a significant decline in depressive symptoms from Time 1 to Time 2. This decline ranged from one-half to two-thirds of a standard deviation on the CES-D and so was a substantial effect size. Keep in mind that these mothers are in the control group, so all of these changes reflect the mother's own initiative rather than a mandatory program requirement.

Figure 2 illustrates these significant decreases in depressive symptoms among mothers who got job training, had paid work, and stopped receiving AFDC for some period, compared to those who did not. Green indicates mothers who had each experience. Bars below the x axis indicate decreases in depression, while bars above the line are increases.

The next question is: Do changes in mothers' psychological well-being relate to their children's behavior or cognitive development? For these analyses I used regression with the child outcomes measured at Time 2 as the dependent variable. As Table 3 shows, I first entered Time 1 depression as a predictor and then, in a 2nd step, Time 2 depression. The row highlighted in gray shows the coefficient for Time 2 depression net of Time 1 or in other words, the coefficient for change in depression. You can see that changes in depression did not predict school readiness --

although we know from other analyses that concurrent depression did. However, increases in depression predicted higher levels of child's behavior problems. As you can see, Time 1 CES-D scores also continue to predict BPI scores, indicating that both initial level and change in maternal depression is important.

Figure 3 illustrates the relation between changes in mother's depression and children's behavior problems. The bars shows BPI scores for children whose mothers' depression increased by more than 1/2 a standard deviation (red), stayed the same (green), or decreased by more than 1/2 a standard deviation (blue). Clearly, the highest levels of behavior problems are shown by those children whose mothers had substantial increases in depression, but the difference between children whose mothers' depression stays the same and decreases is not significantly different. What this means is that while experiencing an increase in their mother's depressive symptoms can lead to poorer outcomes for the child, experiencing a decrease cannot necessarily wipe out the effects of the earlier depression.

Figure 4 shows one more way to look at the same data, but here we also take into account Time 1 depression levels. Here I classified the mothers according to whether, at Time 1 and Time 2, their CES-D scores were above or below a cutoff that signifies that the mother is at high risk for a clinical diagnosis of depression. This creates four groups: never depressed, depressed at Time 1 only or "remitted," depressed at Time 2 only or "new cases," and continuously depressed. At least 25 mothers were in each group, with the largest number, as we'd expect, in the never depressed group. This figure shows Time 2 levels of child behavior problems for each of the four groups. Clearly, the highest level of behavior problems is seen among the children whose mothers were continuously depressed over the two-year period; that group's mean is significantly higher

than all the other groups. But again what's interesting is that the middle two groups -- the children of remitted moms and children of new cases -- are not significantly different. So decreases in depression can wipe out some, but not all, of the effects of earlier depression.

What does this all mean? I think it raises 2 important points: First, there are very high levels of depressive symptoms among almost one-half of mothers on welfare. Most of this depression appears to be untreated, and for a substantial number of mothers it persists over at least a two-year period. Second, the children of these depressed mothers are at risk for more behavior problems -- and these are kids who are already at risk by virtue of living in poverty.

These findings raise the question of what is it about increase in mothers' depression that is causing children's higher behavior problems. With these non-experimental data, we can't determine causality, but we can look at some potential mediators of the association. I looked at two different processes that could mediate the link between increase in depression and higher levels of behavior problems: changes in parenting practices, and changes in mother's socioeconomic situation. In analyses I'm not showing today, I found that when we look at concurrent measures, parenting that is more supportive and stimulating partially mediates the association between mothers' depressive symptoms and children's behavior problems. So what I looked at next was: Do changes in parenting over time mediate the association between changes in mother's depression and children's behavior.

Surprisingly, the answer to this question appears no, for this sample. In fact, Table 4 shows, the bivariate correlations necessary to examine a mediating model were not even met. You can see that change in Socioemotional Support is marginally correlated with change in depressive symptoms but not with BPI scores, while change in Cognitive Stimulation is correlated with BPI

scores but not with change in depressive symptoms. So, changes in parenting practices, as we could measure them here, do not consistently accompany changes in maternal depressive symptoms. This probably reflects not only a true lack of correspondence between the 2 constructs but also measurement issues, and further analyses with the Time 2 parenting measures are in progress.

However, results were more intriguing when we considered whether the experiences that we earlier identified as predicting changes in depression -- namely, getting job training, working for pay, and leaving AFDC -- mediated the association between changes in depression and children's behavior problems. These results (not shown) suggest that leaving AFDC for some time over the two years partially mediates this association. In other words, part of the reason that mothers whose depressive symptoms increase have children with more behavior problems appears to be that these mothers are less likely to engage in activities to move their families toward self-sufficiency. Alternatively, a large part of the reason that mothers who do not leave AFDC have children with more behavior problems is because these mothers have also experienced a decline in their psychological well-being over the two years of the study. Because in this study, both change in depression and change in AFDC receipt were measured at the same time, we cannot untangle the timing of these two events. Nor can we account for factors that may have selected some women both into leaving AFDC, and into improved psychological well-being. However, the data raise the intriguing possibility that moving off welfare -- when it reflects the mothers' own timing, decisions and life changes -- can be beneficial for the well-being of both mothers and children.

Table 1. Standardized regression coefficients for children's cognitive development and behavior problems as a function of maternal depressive symptoms, welfare receipt as child, and life stress.

Dependent Variable	School readiness		Behavior Problems	
	M=25.90 (SD=24.07)		M=10.03 (SD=6.58)	
	Time 1 CES-D	Time 2 CES-D	Time 1 CES-D	Time 2 CES-D
Maternal CES-D	-.21*	-.18*	.46***	.40***
AFDC receipt as child	-.001	-.02	-.03	.01
Life stress	-.05	-.11	-.001	.03
R^2	0.05	0.06	.21***	.19***

+ p≤.10, * p≤.05, ** p≤.01, *** p≤.001

Table 2. Mother's social support, life stress, and experiences from baseline to Time 2 as predictors of change in level of maternal depressive symptoms from Time 1 to Time 2.

	Time 1 Social Support/Stress			Time 1 to Time 2 Experiences				
	High soc. support	Lives w/ mother	High life stress	Any education	Any job training	Any pd. work	Stopped AFDC	Had a baby
% of sample	33.1	46.9	21.1	9.0	6.8	57.1	30.5	10.8
Beta	-0.09	0.09	0.07	-0.1	-.17*	-.22**	-.21**	0.07
R^2	.19***	.19***	.18***	.19***	.21***	.23***	.22***	.19***
F_{Change}	1.59	1.51	0.86	1.98	5.68*	10.27**	8.92**	1.08

+ p≤.10, * p≤.05, ** p≤.01, *** p≤.001

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Table 3. Children's cognitive development and behavior problems as a function of change in level of maternal depressive symptoms from Time 1 to Time 2.

	School readiness M=25.90 (SD=24.07)		Behavior Problems M=10.03 (SD=6.58)	
Step	1	2	1	2
Time 1 Depression	-.23**	-.18*	.47***	.35***
Time 2 Depression	--	-0.12	--	.26**
R^2	.06*	.07*	.23***	.28***
F_{change}	--	1.80	--	10.71**

+ p≤.10, * p≤.05, ** p≤.01, *** p≤.001

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Table 4. Correlations among change in depressive symptoms, change in HOME scores, and Time 2 BPI scores.

	1	2	3	4
1. Change in depressive symptoms	--	-.15+	-.13	.24**
2. Change in Socioemotional Support		--	.42***	-.09
3. Change in Cognitive Stimulation			--	-.22**
4. Behavior Problems Index				--

+ $p \leq .10$, * $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$

FIGURE 1

CONSTRUCT	MEASURE	SOURCE	SCORE
Depressive symptoms	Center for Epidemiologic Studies Depression Scale (CES-D)	Maternal report	Mean of 12 or 20 symptoms endorsed on a scale from 0 ("never/rarely true") to 3 ("mostly/always true")
Children's behavior problems	Behavior Problems Index (BPI)	Maternal report	Total number of 32 behavior problems that are "sometimes" or "always" true
Children's school readiness	Bracken Basic Concept Scale: School Readiness Composite	Child assessment	National percentile rank
Parenting: Emotional Support & Cognitive Stimulation	Modifications of the HOME Scale	Maternal report & interviewer obs.	Total number of items rated positively.
Social Support	11 items indicating perceived availability of support from friends	Maternal report	1 = on average, support available more often than not. 0 = less support.
Life Stress	Modification of Difficult Life Circumstances Scale	Maternal report	1 = 6 or more of 13 life events have occurred in past year. 0 = fewer events.

FIG. 2

Changes in Maternal Depressive Symptoms by Mothers' Employment and AFDC Experiences

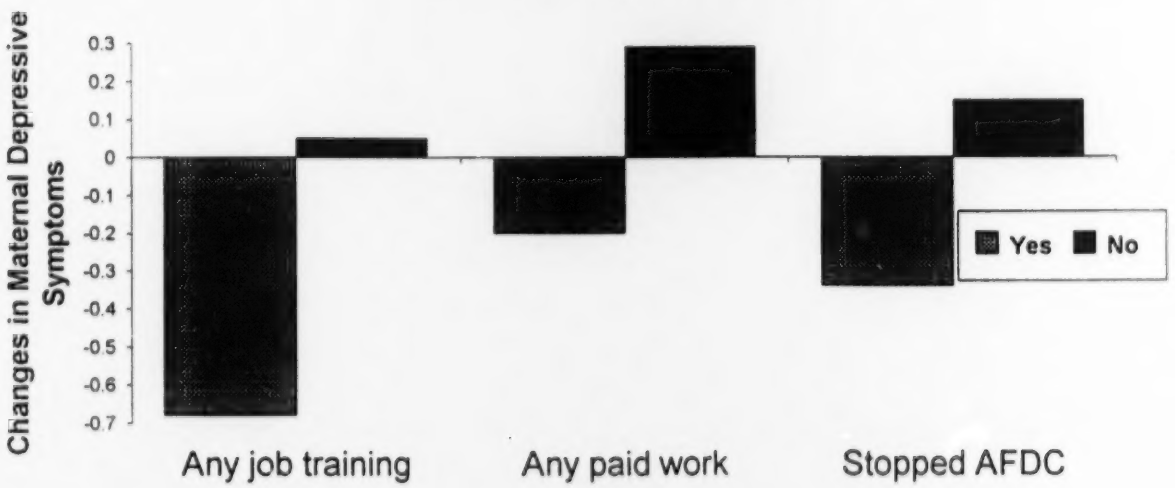


FIG. 3

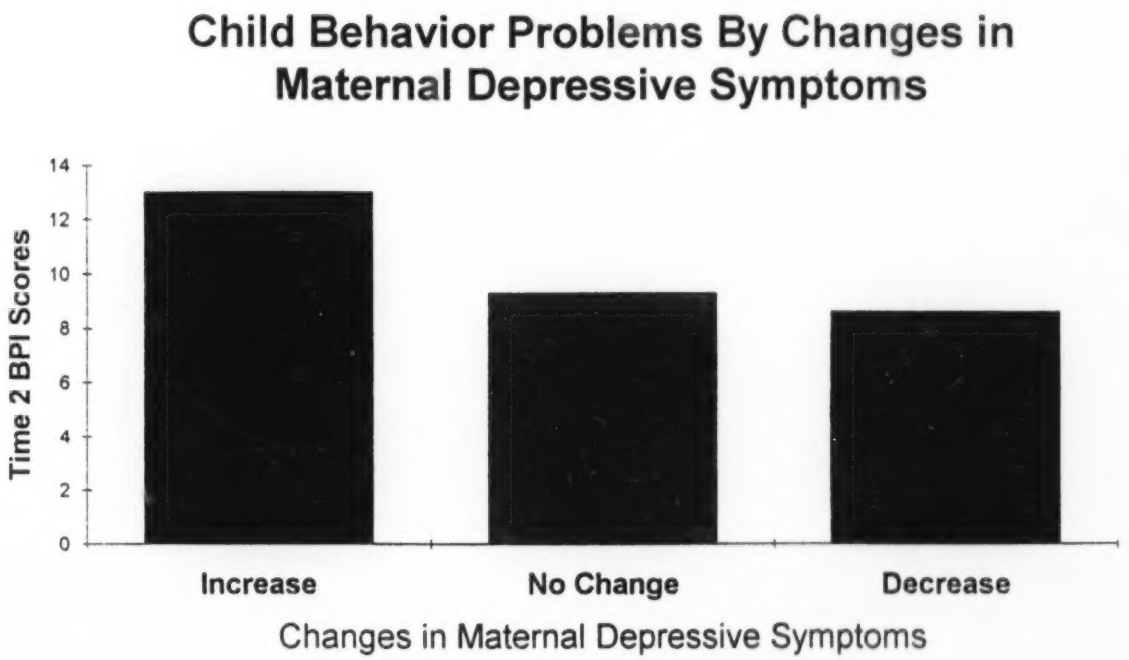
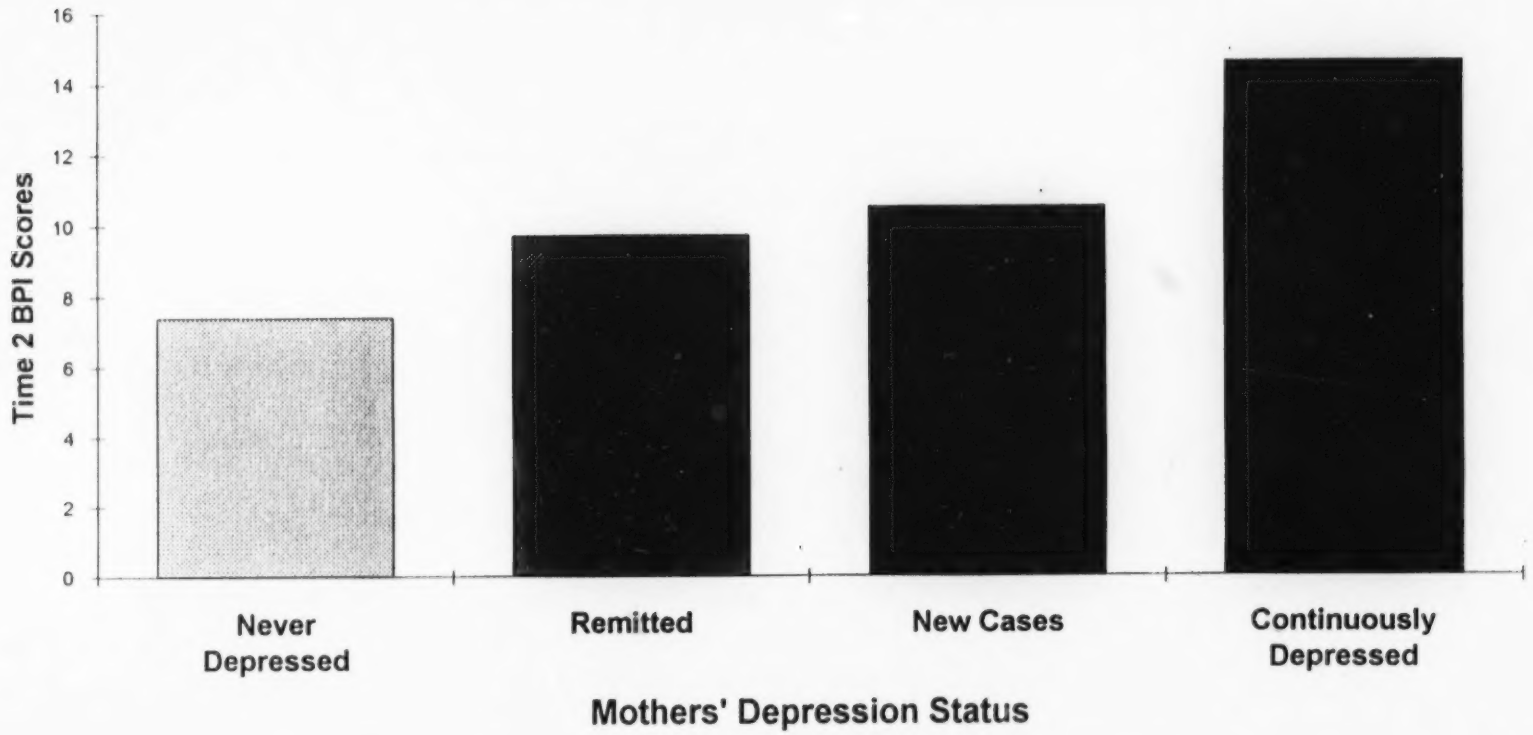

Child Behavior Problems By Changes in Maternal Depressive Symptoms
Time 2 BPI Scores
14
12
10
8
6
4
2
0
Increase
No Change
Decrease
Changes in Maternal Depressive Symptoms

FIG. 4

Child Behavior Problems by Change in Mothers' Depression Status from Time 1 to Time 2



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